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arise, the provisions from the bags are spread, and, just as in civilized life, the ceremony is rounded off with a festival. The festival over, the company disperse, and the gallant groom conducts his bride to his home, where they enter upon the toils and responsibilities of the future.

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## EDITORS' TABLE.

EDITORS: A. S. PACKARD, JR., AND E. D. COPE.

— The utterances of Professor E. DuBois Raymond, at the recent celebration of the birthday of Leibnitz, in Berlin,<sup>1</sup> should have a clearing effect on the intellectual atmosphere of the evolutionists. Professor Raymond exhibits in a marked degree the invaluable quality of intellectual self-control, one which is sometimes wanting to brilliant thinkers. It is perfectly natural for the pioneer, in penetrating a new and unexplored region, to advance with too great celerity, and without giving himself the requisite time to discover the obstacles that may lie in his course. Sometimes it has happened, that, bringing up at the edge of an unexpected precipice, he has made the most astounding leaps, and has been compelled to lay to and repair damages for sometime thereafter.

A good many evolutionists have been floored by a serious interruption to the continuity of their "high priori" road, and not a few of them do not yet know just what has hurt them. That such an evanescent and unsubstantial condition as consciousness should have the gravity necessary to throw a triumphant army of advance into confusion, could hardly be suspected. Does not one of the leaders say that consciousness is to the progress of evolution, what the whistle is to the engine, that makes a good deal of noise but does none of the work? And another says, "If the 'will' of man and the higher animals seems to be free in contrast with the 'fixed' will of the atoms, that is a delusion provoked by the contrast between the extremely complicated voluntary movements of the former and the extremely simple voluntary movements of the latter!" A slight difference of opinion, indeed! One authority tells us that consciousness does nothing, and the other will have it that it does everything, rising even to the autonomic dignity of a "will" for atoms! They agree in believing

<sup>1</sup> See translation in *Popular Science Monthly* for February, 1882.

consciousness to be a form of force; but they differ in that the first authority thinks it is all dissipated, while the other holds it to be a link in a continuous chain of metamorphoses equivalent to every other link. If this be so, and the continuity be unbroken, what iron-clad fingers must these doughty soldiers have, who by merely putting pen to paper open the mouths of so many cannon, inaugurate so many conflagrations, and explode so many magazines. Verily we should have a new anatomy of this five-barreled mitrailleuse, through whose chambers flash such world-moving forces. As to the source of all this power, well says Drysdale, that if the brain of man contains stored such tremendous potency, its escape should, on his leaving this earthly abode, blow the top of his head entirely off.

As usual, truth lies between these extremes; furthermore, a very fundamental truth has been neglected by both sides of the question. Says Raymond, "More temperate heads betrayed the weakness of their dialectics in that they could not grasp the difference between the view which I opposed, that consciousness can be explained upon a mechanical basis, and the view which I did not question, but supported with new arguments, that consciousness is bound to material antecedents." This position has been maintained by various writers, among them Professor Allman,<sup>1</sup> and some of the editors of this journal. But Professor Raymond has not found it to be acceptable to his nearest cotemporaries. He says, "The opposition which has been offered to my assertion of the incomprehensibility of consciousness on a mechanical theory, shows how mistaken is the idea of the later philosophy, that that incomprehensibility is self-evident. It appears rather, that all philosophizing upon the mind must begin with the statement of this point." In stating this point some years ago, we used the following language:<sup>2</sup> "It will doubtless become possible to exhibit a parallel scale of relations between stimuli on the one hand and the degrees of consciousness on the other. Yet for all this it will be impossible to express self-knowledge in terms of force." And again,<sup>3</sup> "An unprejudiced scrutiny of the nature of consciousness, no matter how limited that scrutiny necessarily is, shows that it is qualitatively comparable to nothing else. \* \* \* From this standpoint it is looked upon as a state of matter which is coeternal with it, but not coextensive."

A second self-evident proposition is the following: There is no equivalency or correlation, between the force expended in the maintenance of conscious states, with the energy displayed in those acts which result from those conscious states. Parallel relations between ordinary forces are seen in cases of release.

<sup>1</sup> Address delivered before the British Association for the Advancement of Science, 18—.

<sup>2</sup> Consciousness in Evolution, *Penn Monthly*, July, 1875.

<sup>3</sup> The Origin of the Will, *Penn Monthly*, 1877, p. 439.

Thus the force that applies light to the fuse is little comparable to the explosion of the blast. The force required to raise the sluice is small compared with that which runs the mill. Still less is the relation of the force expended in planning a campaign to that required in executing it; or, of that used in directing a body of laborers to that expended by the laborers themselves. This is easily understood, but it is not so generally perceived by some of the correlators, that a process of exactly the same kind takes place in the mechanism of the acts which transpire within the animal organism. The amount of the primitive force may be very minute, for several releases may separate the thought from the ultimate result.

In the cases above mentioned the mind only serves as a release to the muscles which act, before the latter in turn release still mightier forces. But these facts do not permit the supposition that the original conscious state is not an equivalent of forces both antecedent and subsequent. For without the decomposition of arterial blood and the oxygenation of tissue, consciousness could not exist, and the beginning would not begin.

A third self-evident proposition is this: Movements determined by sensations cannot be compared to those which are not so determined. The former move towards the locality of pleasure, and away from the locality of pain. The latter move in the direct ratio of the product of the masses, and in the inverse ratio of the square of the distance. In the former case there is no equivalency between the force of the originating stimulus and the resulting act, and energy is generally gained in the process; in the second case the correlation is exact, and if there be any difference between the energy of the cause and that of the effect, that which has been dissipated by the way can be accounted for by proper search. But the biologist has much to do with a large class of designed movements, or acts, which are not performed in consciousness, and it is these which are likely to produce a confusion in the mind in regard to the relation between the movements of living and non-living masses. Thus a class of writers compare the hunger of the lowest animals to the affinities of chemical substances, etc., a supposition clearly inadmissible on physical grounds alone. The easiest solution of the problem lies in the well known ease with which conscious acts become automatic and unconscious, so soon as the structural lines which give direction to the force have become organized. Consciousness thus appears as the creator of designed movements, and the resulting organism their sustainer.—C.